CLAIMS

1. A method for identifying a specific cell, comprising directing incident light at a cell, using a detector to obtain a side scatter image, and using the spatial frequency content of the side scatter image to identify a specific cell.

2. The method of claim 1 wherein there is relative motion between the cell and the detector.

3. The method of claim 1 wherein a specific cell subpopulation is identified with a heterogeneous cell population.

4. The method of claim 1 wherein the specific cell identified is an apoptotic cell.

5. The method of claim 4 wherein the apoptotic cell is an early stage apoptotic cell or a late stage apoptotic cell.

6. The method of claim 1 wherein the specific cell identified is a necrotic cell.

7. The method of claim 1 wherein the specific cell identified is at least one of an apoptotic cell and a necrotic cell.

8. A method for identifying a specific cell, comprising directing incident light at a cell, using a detector to obtain a brightfield image, and using the spatial frequency content of the brightfield image to identify a specific cell.

9. The method of claim 8 wherein there is relative motion between the cell and the detector.

10. The method of claim 8 wherein a specific cell subpopulation is identified with a heterogeneous cell population.

11. The method of claim 8 wherein the specific cell identified is an apoptotic cell.

12. The method of claim 11 wherein the apoptotic cell is an early stage apoptotic cell or a late stage apoptotic cell.

13. The method of claim 8 wherein the specific cell identified is a necrotic cell.

14. The method of claim 8 wherein the specific cell identified is at least one of an apoptotic cell and a necrotic cell.

15. The method of claim 8 wherein the spatial frequency content is of the nucleus.

16. A method for identifying a specific cell, comprising contacting a cell with a nuclear marker, directing incident light at the marked cell, using a detector to obtain an image of the cell, and using the nuclear marker image in combination with the spatial frequency content of the cell image to identify a specific cell.

17. The method of claim 16 wherein there is relative motion between the cell and the detector.

18. The method of claim 16 wherein a specific cell subpopulation is identified with a heterogeneous cell population.

19. The method of claim 16 wherein the specific cell identified is an apoptotic cell.

20. The method of claim 19 wherein the apoptotic cell is an early stage apoptotic cell or a late stage apoptotic cell.

21. The method of claim 16 wherein the specific cell identified is a necrotic cell.

22. The method of claim 16 wherein the specific cell identified is at least one of an apoptotic cell and a necrotic cell.

23. The method of claim 16 wherein a single nuclear marker is used.

24. The method of claim 16 wherein the single nuclear marker is 7-aminoactinomycin D.

25. The method according to any one of claims 16-24 wherein the images are collected simultaneously.

26. The method according to any one of claims 1-24 wherein the detector is a time delay integration charge-coupled detector.

27. A kit for use in a multispectral imaging system to identify a specific cell type, comprising a single nuclear marker, wherein a cell contacted with the single marker for a time sufficient to allow identification of an apoptotic cell or a necrotic cell with the multispectral imaging system.

28. The kit of claim 27 wherein the single nuclear marker is 7-aminoactinomycin D.